

Third West Weekly Report Shepherd, Michael

to:

Joyce Ackerman, 'Craig Barnitz (cbamitz@utah.gov)'

12/20/2011 02:58 PM

Hide Details

From: "Shepherd, Michael" < Michael. Shepherd@PacifiCorp.com>

To: Joyce Ackemian/R8/USEPA/US@EPA, "'Craig Barnitz (cbamitz@utah.gov)'" <cbamitz@utah.gov>

7 Attachments











Weekly Reports 12-12 to 12-16.pdf Third West Weekly Log - 2011-50.pdf 225960-1.pdf 226040-1.pdf 226136-1.pdf



226206-1.pdf 226327-1.pdf

Joyce & Craig,

Attached are the reports for the week of December 12, 2011.

All air monitoring results came back negative, except there was a positive hit on Monday last week, it was chrysotile.

Please let me know if you have any questions.

Thanks,

Mike Shepherd
Project Manager
Rocky Mountain Power - Major Projects
801.220.4584 Office
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NA

determined necessary



3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

DAILY CHECKLIST

		DAIL I CHECKLIST	
DATE:	12/12/11		
<u>General</u>			
	Work are	ea Health and Safety Inspection	
NA		and if necessary update Activity Hazard Analyses (AHA) based on planned site	
- 112		for the day	
NA	Safety Pl to commo	anning or "Tailgate" mandatory meeting for all employees and contractors prio encement of any site work. Instruction, review hazards, health & safety issues modifications to the CSHASP	r
NA	•	and safety instruction for all first time employees, contractors or visitors	
NA		e Employee Meeting Record Form B (where applicable	
NA		nt required Respirator Training completion with Form H	
NA	Record ti	imes and numbers of dump trucks and trailers as they leave the site with nated material.	
NA	Confirm	return of waste material manifest documents for each load with site	
	manager.		
NA Comp	olete all CS	HASP Forms (for applicable activities planned for that day)	
NA	Ĭl	lness/Injury Report Form A	
NA	S	ite-Specific Training Record Form C	
NA	Н	lot Work Permit Form D	
NA	T	rench/Evacuation Permit Form E	
NA	C	Combined Space Entry Pennit From F	
NA	E	xclusion zone operations are practiced as instructed.	
	NA	Decontamination unit is working properly.	
	NA	Workers are using decontamination unit as instructed.	
	NA	Workers use personal protective equipment properly.	
Ø		amples at cardinal compass points around exclusion zone. Check out the day to ensure proper operation.	
NAObse	_	measures for dust and fugitive materials i.e. watering excavation sites and	
	out prevent	-	
$\overline{\mathbf{A}}$		sign-in/sign-out log throughout and at the end of the workday.	
☑	Secure th	ne site at the end of the workday	
<u>Samplin</u>	g	•	
NA	Soil Con	firmation sampling for any newly excavated areas	
NA	Stationar exclusion	ry Air Monitoring during contaminated soil removal around the perimeter of the ns zone	;
NA	Personal	Breathing Zone Monitoring on personnel conducting contaminated dust and so	il

Digitally photograph each sample location and at any place field sampling personnel





NA	Electronically file photo files into the on-site database
	Complete Field Documentation
\square	Field Sample Data Sheets (FSDS)
$\overline{\mathbf{A}}$	Logbook
NA	On-site computer database
\blacksquare	Label each sample media with a unique number
\square	Seal sample(s) in zip lock plastic bags
Ø	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
Ø	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
$\overline{\mathbf{A}}$	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
☑	Electronically file sample reports into on-site database



3rd West Substation Site Project Safety Audit

Project: 3rd West Sub Station	Date: 12/12/11
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: _Justin Kargis	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x		4	
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

Chandand	Title] In Compliance	Out of Compliance	J N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			Х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	х			
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	4
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	×
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title '				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	х		-	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

Standard	Title	In Compliance	Out of Compliance	D N/A	Corrective Action Taken and Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	x			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	х			
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.	х			
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.		×	х	

Comments:

Newman excavated for switch gear building. Reached native soil on the west end of the dig and covered it with normal fill material. This excavation revealed existing cable trench and geo-grid barrier signaling the level of previous dig depth. Built a ramp over this site to encapsulate native soil.

CVE worked on forms for stem footings and switch gear building footing throughout the day.





3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

	<u>DAILY CHECKLIST</u>
DATE:	12/13/11
<u>General</u>	
	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
1421	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA Com	uplete all CSHASP Forms (for applicable activities plarmed for that day)
NA	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
·NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
NA	Exclusion zone operations are practiced as instructed.
	NA Decontamination unit is working properly.
	NA Workers are using decontamination unit as instructed.
	NA Workers use personal protective equipment properly.
\square	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation.
	erve control measures for dust and fugitive materials i.e. watering excavation sites and cout prevention.
☑	Review sign-in/sign-out log throughout and at the end of the workday.
☑	Secure the site at the end of the workday
Sampli	<u>ng</u>
NA	Soil Confirmation sampling for any newly excavated areas
NA	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
	exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





NA	Electronically file photo files into the on-site database
\square	Complete Field Documentation
☑ .	Field Sample Data Sheets (FSDS)
$\overline{\mathbf{A}}$	Logbook
NA	On-site computer database
$\overline{\mathbf{A}}$	Label each sample media with a unique number
$\overline{\mathbf{Q}}$	Seal sample(s) in zip lock plastic bags
\square	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
\square	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
NA	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
	Electronically file sample reports into on-site database



3rd West Substation Site Project Safety Audit

Project: 3rd West Sub Station	Date: <u>12/13/11</u>
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By:	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

Standard	Title	In Compliance	Out of Compliance	D N/A	Corrective Action Taken and Date
Standara					Dute
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	х			
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			х	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	,
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A.	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.		1.	х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.	24		x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

.

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	х			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.	х		2	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			X	

Comments:

Newman backfilled and compacted around spread footings.

CVE continued work on forms for switch gear building.

Capitol Electric worked on battery bank in new control building.



NA

determined necessary



3RD WEST SUBSTATION REMEDIATION PROJECT **HEALTH SAFETY MANAGER (HSM)**

		DAILY CHECKLIST
DATE	:	12/14/11
Ca	manal	•
<u>Ge</u>	<u>neral</u>	Work and Health and Cofety Inspection
		Work area Health and Safety Inspection
NA	.	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
NA		Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior
142	•	to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA		Site hazard and safety instruction for all first time employees, contractors or visitors
NA NA		Complete Employee Meeting Record Form B (where applicable
NA NA		Document required Respirator Training completion with Form H
NA	1	Record times and numbers of dump trucks and trailers as they leave the site with
М		contaminated material.
NA		Confirm return of waste material manifest documents for each load with site
1 12 1		manager.
NA		ete all CSHASP Forms (for applicable activities plarmed for that day)
	NA	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
	NA	Combined Space Entry Permit From F
	NA	Exclusion zone operations are practiced as instructed.
		NA Decontamination unit is working properly.
		NA Workers are using decontamination unit as instructed.
		NA Workers use personal protective equipment properly.
4		Set air samples at cardinal compass points around exclusion zone. Check
		throughout the day to ensure proper operation.
NA		e control measures for dust and fugitive materials i.e. watering excavation
	sites ar	nd track out prevention.
☑		Review sign-in/sign-out log throughout and at the end of the workday.
V		Secure the site at the end of the workday
Sa	mpling	
NA		Soil Confirmation sampling for any newly excavated areas
NA		Stationary Air Monitoring during contaminated soil removal around the perimeter of the
		exclusions zone
NA.	4	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil

Digitally photograph each sample location and at any place field sampling personnel





NA	Electronically file photo files into the on-site database
$\overline{\mathbf{A}}$	Complete Field Documentation
\square	Field Sample Data Sheets (FSDS)
\square	Logbook
NA	On-site computer database
\square	Label each sample media with a unique number
 ✓	Seal sample(s) in zip lock plastic bags
☑	Conlplete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
Ø	Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
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3rd West Substation Site Project Safety Audit

Project: 3rd West Sub Station	Date: <u>12/14/11</u>
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: _Justin Kargis	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.	=		X	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			,
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

Standard	Title	In Compliance	Out of Compliance	O N/A	Corrective Action Taken and Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	х			
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1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			х	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	*
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			х	
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Standard	Title				Date
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1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х			
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1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	х			
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	х			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.	ā		х	,
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	х		-	
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			х	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

Standard	Title	☐ In Compliance	Out of Compliance	N/A	Corrective Action Taken and
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1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	х			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.	х			
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Comments:

CVE poured stem footings and footing for switchgear building at around 13:00.

Newman continued compacting and backfilling.

Excavation uncovered native soil on the west side for switchgear building. Newman encapsulated this with clean fill material.





3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

	DAILY CHECKLIST
DATE:_	12/15/11
Com	·.
<u>Gen∈</u> ☑	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
МА	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors pric to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA (complete all CSHASP Forms (for applicable activities planned for that day)
	IA Illness/Injury Report Form A
ľ	IA Site-Specific Training Record Form C
ľ	IA Hot Work Permit Form D
ľ	Trench/Evacuation Permit Form E
ľ	IA Combined Space Entry Permit From F
ľ	Exclusion zone operations are practiced as instructed.
	NA Decontamination unit is working properly.
	NA Workers are using decontamination unit as instructed.
	NA Workers use personal protective equipment properly.
	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation.
	Observe control measures for dust and fligitive materials i.e. watering excavation
	ites and track out prevention.
Image: section of the content of the con	Review sign-in/sign-out log throughout and at the end of the workday. Secure the site at the end of the workday
Sam	pling
NA	Soil Confirmation sampling for any newly excavated areas
NA	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
	exclusions zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and so removal
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





NA	Electronically file photo files into the on-site database
☑	Complete Field Documentation
☑	Field Sample Data Sheets (FSDS)
\square	Logbook
NA	On-site computer database
\square	Label each sample media with a unique number
Ø	Seal sample(s) in zip lock plastic bags
Ø	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
Ø	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
7	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
	Electronically file sample reports into on-site database



3rd West Substation Site Project Safety Audit

Project: 3rd West Sub Station	Date: 12/15/11
Location:3rd West, 1st South, SLC	Job Number:
Survey Conducted By: Justin Kargis	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	х			
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			x	,
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.	-		х	

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		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			*
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	х			,
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	x			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x		8	
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.	х			
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Comments:

Exclusion zone active as of 8:50. Newman suited up and began work. Water truck was frozen and took about an hour to thaw out hose fittings. Were not able to wet excavations but the soil was frozen so dust was minimized. Loaded, sealed, and washed one side dump load that exited the EZ around 11:00. This load contained concrete and contaminated material. Due to miscommunication with Clean Harbors, truck will not be able to dump concrete until Monday 12/19. Had to take an excavator into EZ through east gate around 13:15.

Around 15:15 Newman dug down to 7-8 feet along the far west wall of the yard in an effort to locate transmission cables. Couldn't find cables and immediately covered the hole with gravel.

CVE continued working on forming wall for switchgear building.





3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

		DAILY CHECKLIST
DATE	C:	12/16/11
G	eneral	
\overline{Q}		Work area Health and Safety Inspection
N/		Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
		activities for the day
N/	4	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
N	4	Site hazard and safety instruction for all first time employees, contractors or visitors
N/		Complete Employee Meeting Record Form B (where applicable
N		Document required Respirator Training completion with Form H
N/	4	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA		Confirm return of waste material manifest documents for each load with site manager.
NA	Compl	lete all CSHASP Forms (for applicable activities planned for that day)
	NA	Illness/Injury Report Form A
	NA	Site-Specific Training Record Form C
	NA	Hot Work Permit Form D
	NA	Trench/Evacuation Permit Form E
_	NA	Combined Space Entry Permit From F
☑		Exclusion zone operations are practiced as instructed.
	☑	Decontamination unit is working properly.
	☑ ☑	Workers are using decontamination unit as instructed.
	V	Workers use personal protective equipment properly.
☑		Set air samples at cardinal compass points around exclusion zone. Check
		throughout the day to ensure proper operation. Observe control measures for dust and figitive materials i.e. watering excavation sites and
		track out prevention.
✓		Review sign-in/sign-out log throughout and at the end of the workday.
☑	•	Secure the site at the end of the workday
	mpling	
<u>50</u>	mpmg	
NA ☑		Soil Confirmation sampling for any newly excavated areas Stationary Air Monitoring during contaminated soil removal around the perimeter of the
		exclusions zone
N.	A	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
N.	A	Digitally photograph each sample location and at any place field sampling personnel determined necessary
\Box		Electronically file photo files into the on-site database

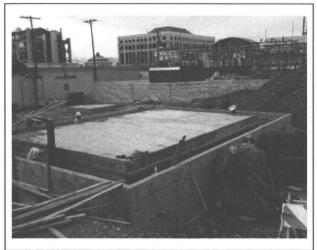




Complete Field Documentation Field Sample Data Sheets (FSDS) ablaLogbook NA On-site computer database Label each sample media with a unique number $\overline{\mathbf{A}}$ Seal sample(s) in zip lock plastic bags ablaComplete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples NA Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees NA Electronically file sample reports into on-site database



РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

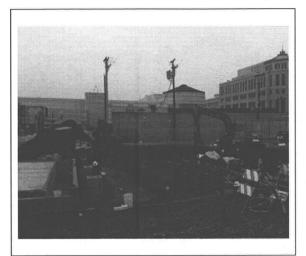
R & Renvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 12/12/2011	FILE:	

SITE PHOTOGRAPHS









РНОТО 2

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

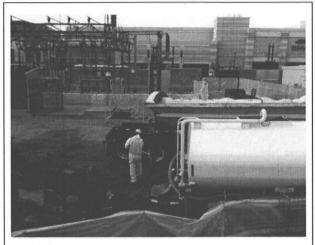
DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 12/13/2011	FILE:	

SITE PHOTOGRAPHS

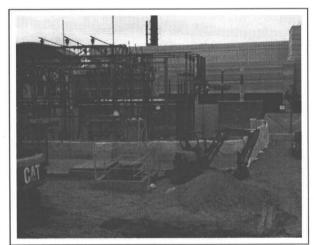




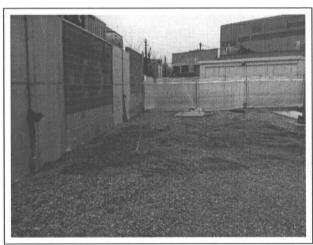
РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 12/15/2011	FILE:	

SITE PHOTOGRAPHS





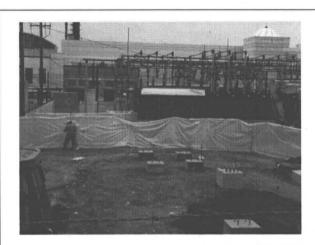
РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & Renvironmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE: 12-16-11	FILE:	

SITE PHOTOGRAPHS



PACIFICORP OPERATIONS - Field Construction Representative Daily Log PROJECT NAME: Third West Sub - Rebuild DATE: Monday, December 12, 2011 3000078050 / 10035803 MAIN CONTRACTOR: Cache Valley Electric PO & Work Order NO.: **Crew Start Time:** 6:50 Crew Stop Time: 17:20 10:30 Tot Hrs mns: FCR Start Time: 6:40 17:20 10:40 FCR Stop Time: Tot Hrs mns: Use military time format 00:00 **WEATHER CONDITIONS:** Sunny - 18 degrees in AM, 40 degrees In PM DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. CVE fab crew stripped the forms from the transformer pedestal. Poured the pads for the two NE "N" foundations and started forming up the footing for the switchgear foundation. Newman removed some wet material from the excavation for the "N" footings. PSI will be here at 10:00 to witness the proof roll of the switchgear excavation. Newman is hauling spoils to the staging si Newman completed approximately 70 feet of the excavation for the switchgear, 70' of the total 101' necessary. PSI (Zach) came by and witnessed the proof roll of the excavation for the switchgear and gave a thumbs up. I met with Southwire and New River personnel, along with Alan Bezzant and walked through the work procedure for pulling out the old 46 kV UG cable from the substation, west to the tennination poles. It appears that New River will be cutting the cable in the vaults on 400 West and the cable will need to be pulled from there to the substation by CVE, or someone, when we can excavate in the energized area of the substation. Brent Wiggins confirmed that he wants sand placed between the bottom of the switchgear footing and the top of the NE "N" pad, a depth of approximately 3" and an overhang of CVE fab crew = 6. Newman = 4, R&R = 1, Wilding = 1. approximately 6.5". IF WORKING IN ENERGIZED SUBSTATION: Dispatcher login, name and time: Manny LuHaun 0640 Dispatcher logout, name and time: Al Swinski 1720 **DISCREPANCIES: IMMEDIATE CORRECTIVE ACTION TAKEN:** Last week we found two fdns in the old sub that were under the yard rock and not included CVE to provide CO for removing the additional concrete. in the details of concrete to be removed from the site CVE to provide per unit price to drill concrete. No resolution on the 20' ground rod issue. Identified an additional retaining wall that is below grade and does not show on the Demo Will excavate to determine dimensions. DELAYS OR LOST TIME ENCOUNTERED:

E	QUIPMENT	(working,	deli v ered,	idle):

CVE fab crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, crew tmck, boom truck (2). Newman: portable wash-down structure, trachoe (2), mini-ex, bobcat, power washer, water truck, compactor, backhoe.

OSHA Recordable Safety Incidents: Reported by: Time:



Russ Johnson

Field Construction Representative

PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME:	Third West Sub -	Rebuild	DATE:_	Tuesday	y, December 1	3, 2011
PO & Work Order NO. :	3000078050 / 10	035803	MAIN CONTE	RACTOR :	Cache Valle	y Electric
Crew Start Time: 6	:55	Crew Stop Time:			Tot Hrs mns:	17:05
FCR Start Time: 6	:55	FCR Stop Time:			Tot Hrs mns:	17:05
Use military time format 00:00					•	
WEATHER CONDITIONS:		Sunny - 25 degr	ees in AM, 35 de	egrees i n F	M	
DESCRIPTION: (work performed R&R set up four monitors. CVE fab cr						
and tied rebar for the east two-thirds of the switchgear footing, as approved by at 1:00 PM. Capital Electric delivered rack. They anticipate finishing their would in 100 South and 500 West and 200' lengths and they are in the procestermination pole to the first vault in 100 the termination pole that it is in conduit Newman = 4, R&R = 1, Wilding = 1, C	f the switchgear footing brent Wiggins. They the batteries, rack, chank by Friday. Southwas cut the Gadsby cases of cutting it up into a South is direct buried to The same holds true.	g. Newman backfilled anticipate pouring the arger and panel to the irre/New River has pull ble in the vault on 400 20' lengths for salvaged, at least there is no ite for the terminations	around the NE "Ne" pedestals and control building at ed the Jordan Circl West. The Jorda to Utah Metals. Indication where then the substation a	I" pads with d the switch nd have star cuit from the n conductor t appears th e cable ente	ABC and with s gear footing on rted assembling vault on 400 W is pulled out or at the cable from	and under Wednesday I the battery Jest to the In the street in The the
IE WORKING IN ENERGIZED OU	DCT A TION.					
IF WORKING IN ENERGIZED SU						
Dispatcher login, name and time: Dispatcher logout, name and time:	David Hurst 0655 Kim Batt 1720				<u>. </u>	
DISCREPANCIES:	Kiiii Ball 1720		IMMEDIATE CO	RRECTIV	E ACTION TA	KEN:
Last week we found two fdns in the old sub	that were under the vare		CVE to provide CO			
in the details of concrete to the removed fro	•					
No resolution on the 20' ground rod issue.			CVE to provide per	unit price to d	rill concrete.	
Identified an additional retaining wall that is Plan.	below grade and does r	not show on the Demo	Will excavate to dete	ermine dimen	sions.	
					<u>.</u>	
DELAYS OR LOST TIME ENCOU	INTERED:				•	
·						
EQUIPMENT (working, delivered						
CVE fab crew: Portable toilet (2), forklift, 1 portable wash-down structure, trachoe (2)	• • • • • • • • • • • • • • • • • • • •			crew truck, bo	oom truck (2). Ne	ewmaη:
OSHA Recordable Safety Incide	nts:			Reported	by: ,	Time:
	<u> </u>				' ' ' 	



PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME:	Third Wes	st Sub - Rebuild	DATE : Wednesd	ay, December	14, 2011
PO & Work Order NO. :	30000780	050 / 10035803	MAIN CONTRACTOR:	Cache Valley	Electric
Crew Start Time:	6:50	Crew Stop Time:	17:20	Tot Hrs mns:	1 0 :30
FCR Start Time:	6:50	FCR Stop Time:	17:00	Tot Hrs mns:	10:1 0
Use military time format 00:0		1 OK Otop Time.	17.00		10.10
· ·					
WEATHER CONDITIONS:		Overcast / Sunny - 26	degrees in AM, 40 degre	es in PM	
DESCRIPTION: (work per R&R set up four monitors CVI					
D footings and around the sout of concrete and dirt from the Exhave been notified that they will return as soon as the control by and sent the salvaged cable to = 1, Capital Electric = 2, South	Z on Thursday, Dece l I not be able to work uilding is no longer pa Utah M etals. They h	mber 15. Capital Electric conti on Thursday and Friday becau art of the EZ. Southwire/New I ad a total of thee dumpsters.	nued assembly of the Commuse the new control building w	inication battery ill be part of the I he Gadsby circui	rack and EZ. They wi t, cut it up
IF WORKING IN ENERGIZ				<u> </u>	
Dispatcher login, name and time		n 0650	···-		
Dispatcher logout, name and ti	me: No Logout				
DISCREPANCIES:			IMMEDIATE CORRECTIV		
Last week we found two fdns in the		er the yard rock and not included	CVE to provide CO for removing	the additonal conc	rete.
in the details of concrete to be rem No resolution on the 20' ground roo			CVE to provide per unit price to d	rill concrete.	
Identified an additional retaining wa Plan.			Will excavate to determine dimen		
Communications battery rack exter that they were told to proceed with			Sent email and pictures to Roger acceptable to RMP.	F to confirm that the	nis conflict is
DELAYS OR LOST TIME E	NCOUNTEDED:				
EQUIPMENT (working, de					
CVE fab crew: Portable toilet (2), portable wash-down structure, trad	fbriklift, 1 dumpster, offic			oom truck (2). Nev	vman:
OSHA Recordable Safety	Incidents:		Reported	by: 1	



PACIFICORP OPERATIONS - Field Construction Representative Daily Log

	, 2011
PO & Work Order NO. : 3000078050 / 10035803 MAIN CONTRACTOR : Cache Valley	Electric
Crew Start Time: 6:55 Crew Stop Time: 17:05 Tot Hrs mns:	10:10
FCR Start Time: 6:55 FCR Stop Time: 17:25 Tot Hrs mns:	10:30
Use military time format 00:00	10.00
WEATHER CONDITIONS: Overcast / Sunny - 26 degrees in AM, 35 degrees in PM	
DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.) R&R set up four monitors. Newman is getting the EZ ready to start loading out concrete and dirt from the EZ. They have 2-3 tructions to contractor, # of crew members onsite.)	
Harbors for authorization to dump concrete so they loaded out one truck and are now on hold, waiting for notification from Clearn in Newman excavated at centerline of the Jordan 46 kV bay, just inside the west wall to a depth of 8' and was not able to locate the extra kV cable. We will try again next week and will need to resolve the elevation difference between the existing cables, and the shall elevation specified for the new 138 kV bank. CVE fab crew stripped the "N" pedestals and the switchgear footings and is forming walls for the east one-third of the switchgear. Southwire/New River completed the removal of the Jordan and Gadsby circuits. The unable to remove the cable from the vault in 400 West into the Third West Sub and from the vaults in the street on 100 south to the poles. CVE fab crew = 5, Newman = 4, R&R = 1, Wilding = 1, Southwire = 1, New River = 5.	existing 40 ower up the ey were
IF WORKING IN ENERGIZED SUBSTATION:	,
Dispatcher login, name and time: Kim Batt 0655	
Dispatcher logout, name and time: Kim Batt 1725	
DISCREPANCIES: IMMEDIATE CORRECTIVE ACTION TAK	EN:
11/22 - We found two fdns in the old sub that were under the yard rock and not included in CVE to provide CO for removing the additional concre	ete.
the details of concrete to be removed from the site 11/16 - No resolution on the 20 ground rod issue. CVE to provide per unit price to drill concrete.	
Time - No resolution on the 20 ground rod issue.	
11/30 - Identified an additional retaining wall that is below grade and does not show on the Demo Plan. Will excavate to determine dimensions.	
12/14 - Communications battery rack extends info the northeast doorway. Capital Electric Sent email and pictures to Roger F to confirm that this	s conflict is
indicates that they were told to proceed with the install by Barry Andersor acceptable to RMP. 12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and Sent e-mail to Roger F.	
didn't find them. Will try again. Actual depth will be much deeper than design of new bank	
DELAYS OR LOST TIME ENCOUNTERED:	
EQUIPMENT (working, delivered, idle):	
CVE fab crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, crew truck, boom truck (2). Newro	man:
portable wash-dovm structure, trachoe (2), mini-ex, bot)cat, power washer, water truck, compactor, backhoe.	
OSHA Recordable Safety Incidents: Reported by: Ti	me:
The resolution of the political by the p	e.
· · · · · · · · · · · · · · · · · · ·	



PACIFICORP OPERATIONS - Field Construction Representative Daily Log CCT NAME: Third West Sub - Rebuild DATE: Friday, December

PROJECT NAME:		Third Wes	st Sub - Rebuild	DATE:	Friday	, December 16	<u>5,</u> 2011
PO & Work Order NO. :		30000780	050 / 10035803	MAIN CONT	RACTOR	Cache Valle	y Electric
Crew Start Time:	6	:55	Crew Stop Time:	15:00)	Tot Hrs mns:	8:05
FCR Start Time:	6	:55	FCR Stop Time:	15:00	<u> </u>	Tot Hrs mns:	8:05
Use military time format 00:0		.00	rowotop ranc.	10.00	<u></u>	-1001110111101	0.00
ose minery time ioima; oo.o.		-					
WEATHER CONDITIONS:			Overcast / Sunny - 2	0 degrees in AN	l, 35 degre	es in PM	
DESCRIPTION: (work per	orma	d ceneral c	omments instructions to	contractor #	of crew me	mhere onsite	. 1
R&R set up four monitors. New on both sides of the retaining w crew continued forming and tying	man re all that g reba	elocated the E will need to b r for the east	Z fence from the conex to the e removed. They also placed	south fence, east some backfill in t	approximat he area sout	ely 10' to facilita h of the conexe	te excavatins. CVE fab
IF WORKING IN ENERGIZED Dispatcher login, name and time	e:	Gus Montane	ez 0655				
Dispatcher logout, name and tir	ne:	Gus Montan	ez 14:55	IMMEDIATE O	ODDECTIV	/E A OTION T	NICENI
DISCREPANCIES:	, d = , t Ab	-4	the conditional most included in	IMMEDIATE C			
11/22 - We found two fdns in the ol the details of concrete to be removed.			the yard rock and not included in	CVE to provide CC	ioi iemoving	the additional Con	CI e le.
11/16 - No resolution on the 20' gro				CVE to provide per	unit price to d	frill concrete.	
11/30 - Identified an additional reta	ining wa	ll that is below	grade and does not show on the	Will excavate to de	termine dimer	nsions.	
Demo Plan. 12/14 - Communications battery rad	ck exten	ds into the nort	theast doorway. Capital Electric	Sent email and pict	tures to Roger	F to confirm that	this conflict is
indicates that they were told to prov 12/15 - Excavated to locate the 46 didn't find them. Will try again. Act DELAYS OR LOST TIME E	ceed with kV cable tual dept	h the install by es exiting the w th will be much	Barry Andersor est side of the yard. Dug 8' and	acceptable to RMP Sent e-mail to Rog	. Under evalu		
Descrepancies, cont'd: The J-bars of splicing extensions so that the re	for the	switchgear wall			nan the specif		s in the proces
FOLUDATINE do	illoros	Lidle				<i>o</i>	
EQUIPMENT (working, del CVE fab crew: Portable toilet (2), f portable wash-down structure, trad	orklift, 1	dumpster, offic		• •			ewman:
OCUA December Octob	lm c ! !	-4			Donorted	h	Time
OSHA Recordable Safety	incide	nts:		 	Reported	by:	Time:
<u></u>	_				<u> </u>		
<u> </u>					J		





December 14, 2011

Laboratory Code: Subcontract Number:

RES NA

Laboratory Report: Project # / P.O. #

RES 225960-1 None Given

Project Description:

3rd West Sub - RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 225960-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 225960-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

December 13, 2011

Analysis Type: Turnaround:

TEM, AHERA 24 Hour

Date Samples Analyzed:

December 14, 2011

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	ID N	umber	Analyzed	Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-121211-E	EM	836583	0.0800	1005	ND	0.0048	BAS	BAS
3W-121211-S	EM	836584	0.0800	1009	ND	0.0048	BAS	BAS
3W-121211-N	EM	836585	0.0800	1008	1	0.0048	0.0048	12 .5
3W-121211-W	EM	836586	0.0800	1007	ND	0.0048	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm² = 0.010

Effective Filter Area = 385 sq mm

DATA QA

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE II. SUMMARY OF ANALYTICAL DATA .

RES Job Number:

RES 225960-1

Client:

R & R Environmental

Client Project Number / P.Q.: None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

December 13; 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

December 14, 2011

Client ID Number	Lab ID No	umber	Asbestos Mineral	Ast	oestos Str	uctu re Typ	es*	Structures >5 Microns in Length	**Excluded Structures	Asbestos Structures for
			-	Fibers	Bundles	Clusters	Matrices			Concentration
3W-121211-E	EM	836583	ND	0	0	0	0	0	0	0
3W-121211-S	EM	836584	ND	0	0	0	0	0	0	. 0
3W-121211-N	EM	836585	Chrysotile	0	0	0	· 1	0	0	1
3W-121211-W	EM	836586	ND	0	.0	0	0	0	0	0

^{*}See Analytical Procedure for definitions

^{**}C = Excluded from total due to lack of confirmation

^{**}L = Excluded from total for length less than 0.5 micron (AHERA only)

^{**}A = Excluded from total due to inconect aspect ratio

ND = None Detected

	de	L
Due Date:_	23	12-14-11
Due Time:_		<u> 9</u> 3ø~

REILAE RESERVOIRS ENVIRONMENTAL, INC. 6801 Logan St. Denver, CO 90218 · Ptr 303 984-ia86 · Fax 303-477-4275 · Toll Free :866 RESi-ENV

Page __1_ of ___

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						Fax:											Fax:						
						Cell/s	ager:				_						CelVp	BOBL					
Project Number and/br P.O. 9:	.l.,						Data D																
Project Description/Location: 355 West Sub - RMP] [bue	26	1	16	w	<u>₩</u>	, COV	<u>~</u>									
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(Rush PCM = 2hr, TEM = 6hr.)		ΙI				1	ļ			١.					D	ust =	D		Pa	int = P	ule.	_	
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MICROBIOLOGY LABORATORY HOURS: Weekdays: 9ain - 6pm		Long report, Point Count	2 Pg					iΙ	1	. S	Ē	g g	9 5										
E.coli O157:H7, Coliforma, S.aureus 24 hr2 Day		ğ	\$ <u>2</u>	SHA OSHA		ing Fume,		Ш	,	1 2	Ē	E 5	§ 6										
Salmonella, Listeria, E.coli, APC, Y & M 48 Hr3-5 Day		8	= <u>∞</u>		Respirable	اقا	ŀ]		ğ	8 3	8 8										
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"Turnaround times establish a laboratory priority, subject to taboratory volume and a apply for attentiours, woakonds and holidays."	re not guaranteed. Additional fees	Short report,	5.			CLP, Weldir	ORGANICS - METH Salmonella: +/-	O157:H7:	ءِ اج	6	+	÷ 3	i je	- 1	E E								
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Special Instructions:		20	\$ 2		. 93	og	울 욡	8	19 4	8	릙	8 M	빌병		<u> </u>	ŭ	ğ	Da	te	Time	EM Nu	nber ((Laboratary
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Client sampla ID number (Sample ID's must be unique		ы		1	<u> </u>	rī;	<u> </u>	7-7	MICE	OBI	PLO	βY	- B				*	mm/c	1	hh/mm a/p		<u> </u>	·
1 3W.101211E			X	\vdash		-	+		+	+	$\left \cdot \right $	-			005	A		121	411		23	کې	
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10			. 1:		_	4				ŀ												_ :-	
Number of samples received: (Addition	nal samples shall be listed on a	attact	hed lo	ng for	m.)			_	_														
NOTE: REI will analyze incoming samples based upon information received and will not be re analysis as indicated on this Chain of Custody shall constituts an analytical services agreeme																agre	s that	submis	sion of t	he following san	ples for req	uested	
Relinquished By: half				Duto	/Time:	12	12	T , ,							7	ا ماه	Cond	ition:		nice S	anlad	late	
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Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type	Structure Types
A = Amosite	F = Fiber
An = Anthophyllite	B = Bundle
C = Chrysotile	C = Cluster
Cr = Crocidolite	M = Matrix
T = Tremolite	

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

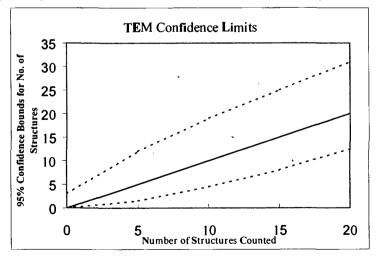
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	REI
Instrument	JEOL 100 CX (t) S
Voltage (KV)	100 KV
 Magnification	ZOKX OKX
Grid opening area (mm2)	0.01
Scale: IL≖	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	·
QA Type	

1514 110000100 011	a otal o ooalit
Client:	Rock
Sample Type (A=Alr, D=Dust):	Α.
Air volume (L) or dust area (cm2)	1005
Date received by lab	i 2/13/11
Lab Job Number:	225900
Lab Sample Number:	836563

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Votume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	12/4/11
Method (D=Direct, I=Indirect,	[]
IA=Indirect, aslied)	<u> </u>
Counting rules (ISO, AHERA, ASTM)	AH.
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	nictures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
·	Grid Opening	Туре	Primary	Total	Length	Width	Identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EOS
A	F10-1	ND												
	E6-1	ND												
	C6-1	MD			Pin	n A	a B	70 kin	b	4	7-10/2	Ler	5	
	E63	ND										·		
3	65-3	ND												
	F5-3	ND							-					
	E5-3	M					·							
	C5-3	M						,				-		

Laboratory name:	REI
instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification .	ZOKX OKX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Rock
A
1009
12/13/11
225940
836564

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	·
Total Resuspension Volume (ml)	
Volume Applied to secondary litter (ml)	

Analyzed by	JB
Analysis date	12/4/4
Method (D=Oirect, I=Indirect,	
IA=Indirect, ashed)	D'
Counting rules	Ail
(ISO, AHERA, ASTM)	H_+
Grid storage location	Month Analyzed
Scope Alignment	Date Analýzed

Grid			Structure No. of Structures		Dimer	nsions	Identification	ification Mineral Class				1 = yes, blank = no		
Ond .	Grid Grid Opening	Туре	Primary	Total	Length	Width	roemmeation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
F)	614-1	ND												
	F4-1	ND												
	E4-1	WD			Phos	Aq	B ~	70% into	4	5-7	Lo debris			
	C4-1	NÓ			,		۸		1			·		
3	H3-1	ND						Ai	5 /	2/14/	V			
	613-4	ND						//		יין				
	(93-1	ND						. /						
	F3-4	ND												

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	ZOKX OKX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Roth
A
1008
12/13/11
225960
8365 85

F-Factor Calculation (Indirect Pre	ps Only):
Fraction of primary filter used	
Total Resuspension Volume (mi)	,
Volume Applied to secondary titter (ml)	

Analyzed by	1375
Analysis date	12/14/11
Method (D=Direct, l=indirect, IA=Indirect, ashed)	B
Counting rules (ISO, AHERA, ASTM)	Alt
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	No. of Structures		nsions	Identification	Mineral Class				1 = yes, blank = no		
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K3-6	M		1	2	1	(D		1		TO THE	,		
	13-6	ND												
	63-6	MO			Pa		eB	70/	his	4	The debu	: رخ ر		
	F3-6	ND												
B	62-3	ND							4	B 12	lighi			
	F2-4	ND		 					17	/	7			
 	F23	ND					·							
	E2-6	ND					·						·	
											_		·	
	·													

Laboratory name:	REI_
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	EOKX OKX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	Rock					
Sample Type (A=Air, D=Dust):	A					
Air yolume (L) or dust area (cm2).	1007					
Date received by lab	12/13/11					
Lab Job Number:	225960					
Lab Sample Number:	836586					
	_ •					

Fraction of primary filter used		
Total Resuspension Volume (ml)		
Volume Applied to secondary filter (ml)	1	· · ·

Analyzed by	113
Analysis date	12/11/11
Method (D=Direct, l=Indirect,	
IA=Indiract, ashed)	
Counting rules	Ail
(ISO, AHERA, ASTM)	<u> </u>
Grid storage location	Month Analyzed
Scope Alignment	Date Analýzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class		· · · · · · · · · · · · · · · · · · ·		1 = y	1 = yes, blank = no			
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS		
A	HZ-6	ND												-		
	612-6	M								<u>.</u>			·			
	F2-6	M					·		·							
	62-6	ND			fn	o A	4B.	-70%	he	rf	3-5%	de	:^^ <u>></u>			
B	E3-6	ND						<i>J</i>								
	£3-3	W						13	12/14	V s		-				
	C3-6	M							7-7	"						
	C3-3	\mathcal{M}			,			/				-				
													·			

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter wds then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, s/cc = #Asbestos Structures x 1 x Eff. Filter Area (mm²) x IL Volume (L) Average GO area (mm²) 1000cc

Filter loading; $s/nim^2 = \frac{\# Asbestos structures}{Area Analyzed (mm^2)}$

GO = TEM grid opening



December 15, 2011

Laboratory Code: Subcontract Number:

RES NA

Laboratory Report: Project # / P.O. # RES **22**6040-1 None Given

Project Description:

3rd West Sub - RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer.

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 226040-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 226040-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Name Change

Client Project Description: Date Samples Received: 3rd West Sub - RMP

Analysis Type:

December 14, 2011

Turnaround:

TEM, AHERA 24 Hour

Date Samples Analyzed:

December 15, 2011

Client ID Number	Lab ID Ni	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-121311-S	EM	837031	0.0800	1018	ND	0.0047	BAS	BAS
3W-121311-E	EM	83703 2	0.0800	1007	ND	0.0048	BAS	BAS
3W-121311-W	EM	837033	0.0800	1014	ND	0.0047	BAS	BAS
3W-121311-N	EM	837034	0.0800	1016	ND	0.0047	BAS.	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

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Externance CoEstima
Externance CoEstima
Externance CoEstima
Externance CoEstima
Externance
Externa

RES 226040

INVOICE TC: (IF DIFFERENT) **CONTACT INFORMATION:** Company. company: R & R Environmental Contact: Dave Reskellow Contact Address: W. 9000 S 801 541-1035 Fax: Coli/pagar noject Number and/or P.O. 4: Final Oats Deliverable Email Address: Project Description/Location: 312 West Sub - RMP dove@ meninocon ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm REQUESTED ANALYSIS **VALID MATRIX COOES** LAB NOTES: RUSH (Same Day) PRIORITY (Next Day) STANDARD AIr = ABuik = B (Rush PCM = 2hr, TEM = 6hr.) Paint = P Dust = D CHEMISTRY LABORATORY HOURS: \yeekdays: 8am - Spni Soil = S Wipe = W RUSH 24 hr. 3-5 Day Metal(s) / Dust F = Food Swab = SW. Quant Prior rustWication la RCRAS/Metals & Welding Drinking Water = DW | Wasta Water = WW Point Count RUSH ___ 6 day ___10 day required for RUSH Fume Scan / TCLP + dad O = Other \$umarounds,™ Organics 24 tr. 3 day 5 Day **ASTM E1792 approved wipe media only** l, 7402, ISO, ISO-Indirect P MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm E.coll O1S7:H7, Coliforms, S.aureus ___ 24 hr. ___2 Day ___3-5 Day - 7400A, 7400B, OSHA Salmonella, Listeria, E.coli, APC, Y & M _48 Hr. ___3-5 Day Mold RUSH 24 Hr 48 Hr 3 Day 5 Day **Turnaround times establish a laboratory priorily, subject to laboratory yoluthe and am hot guaranteed. Additional fee apply for afterflours, weekends and holidays." Matrix Code Special Instructions: EM Number (Laboratory Date Time Use Only) Collected Collected Client sample ID number (Sample ID's must be unique) MICROBIOLOGY × 337031 × 32 × 33 016 34 9 10 (Additional samples shall be listed on attached long form.) Number of samples received: NOTE: REI will analyza incoming aampies based upon information received end will not be responsible for errore or omissions in calculations results for my the inaccuracy of original data. By signing client/corr pany representative egrees that automission of the following aompies for requested analysis as indicated an this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, fellura to comply with payment terms may result to a 1.5% monthly interest surcharge. Fed Ex Relinquished By: Date/Time: Sample Condition: Sealed Intact Laboratory Use Only Yes No Temp. (F°) Yes / No Yes / No 12-14-1 FRAILY Received By: DateFfime: Date 11/1 Time 91000 Results: Contact Phone Email Fax Contact Phone Email Fax Initials Date Time Initials Phone Email Fax Phone Email Fax Contact Initials Contact Date Time Initials 4014 4330



December 16, 2011

Laboratory Code: Subcontract Number: RES NA

Laboratory Report: Project # / P.O. #

RES 226136-1 None Given

Project Description:

3rd West Sub RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 226136-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101890-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 226136-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description: Date Samples Received:

3rd West Sub RMP

Analysis Type:

December 15, 2011 TEM, AHERA

Tumaround:

24 Hour

Date Samples Analyzed:

December 16, 2011

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	ID Number		Analyzed Volume Sampled		Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-121411 E	EM	837675	0.0800	999	ND	0.0048	BAS	BAS
3W-121411 S	EM	837676	0.1000	192	ND	0.0201	BAS	BAS
3W-121411 W	EM	837677	0.0800	995	ND	0.0048	BAS	BAS
3W-121411 N	EM	837678	0.0800	995	ND	0.0048	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = .25 mm

Effective Filter Area = 385 sq mm

Due	Date:_	12:16-11
	Time:_	_ 930am



RES 226136 Page

			•		Pager : 3 INVOICE TO	903-809-2 1- (IE D		PENT									C	ONTAC	T IN	EOB	MATION				
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Project Number		<u> </u>								Fin		Celivers													
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	letals & Welding	RI	JSH 5 day	10 day	**Prior notification is required for RUSH		Quant,		l	8	11	11	į		11	8	l	Drinking	y Wa	lar = l	DW Wast	Water = V	w		
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Special Ins	tructions:					- 1	. .	Semi-quant, Mis PCM - 7400A,	T . Total,	METALS - Acetyle(s) RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	E.coll 0157	Aerobic	E.coli:	S.aureus	Modd:	PLER	Sample V((L) / Area	Matrix Code	Containers	Date	Time	B	Number Use Oil	
Client sa	mple 1D numbe	r 1. 1.	(Sample ID's mu	st be uniqua)			5 E	Sem Sem	DUST	# 5	8		licro	BIOL			8	83	Zai	#	Collected mnVdd/yy	hh/mm a		1.	
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NOTE: RE	eamples received: El will analyze incoming si s indicated on this Chain	amples based upo	n information received a	and will not be ret	al samples stall be liste sponsible for errors or omissiont with payment terms of NET	ns in calcu	dations	Backing	from t	he ineccu	racy of	original y result	data E	ly signi % moi	ing clie	ni/oor	npany rej surcharg	oresentativ 18.	e agre	es tha	t submissi on	of the followin	g samples f	or requested	
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fu-(2) # 730 (83% 589%)
7-2011_version 1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

		Α.			
Α	=	Amosite		F =	Fiber
An	-	Anthophyllite		B =	Bundle
C	=	Chrysotile	,	C =	Cluster
Cr	=	Crocidolite	•	M =	Matrix
т	=	Tremolite	•		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

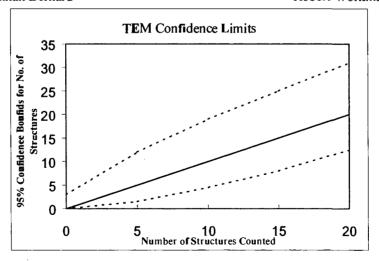
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	REI
Instrument	JEOL 100 CX NS
Voltaae (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: IL ≈	0.28 um
Scale: 10 =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	n/a
QA Tyoe	Not QA

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	999
Date received by lab	12/15/11
Lab Job Number	226136
Lab Sample Number	837675

F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary filter used	
Total Rasuspension Volume (ml)	
Veturne Applied to secondary filter (ml)	

Analyzed by	W/5B
Analysis date	12/15/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	り
Counting miles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Γ	Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	Gild	Grid Opening	Туре	Primary	· Total	Length		Identineation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EOS
	A	Eloy.	M.		· 								· · · · · ·		
		C6-4	M				Pro	A 807	> intact ~	57.	lebi				
		C416	M				Pre	p Bu	A fur	Un	n 12/	5/v			
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Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Maonification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Prknary filter area (mm2)	385
Secondary Filter Area (mm2)	n/a
QA Type	Not QA

Client :	R+R
Samole Tyoe (A=Alr, D=Dust):	A
Air volume (L) or dust area (cm2)	192
Date received by lab	12/15/11
Lab Job Number:	226136
Lab Sample Number:	837676

Las Campio (tambel)	
F-Factor Calculation (Indirect Pr	reps Only):
Fraction of primary filter used	
Total Rasuspenskm Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	-11/-
Analysis date	12/15/11
Method (D=DirecL i=Indirect, IA=IndirecL ashed)	D
Counting mies (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Sti	ructures	Dimer	nsions	Identification	dentification Mineral Class		•		1 = ves, blank = no		
	Grid Opening	Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EOS
A	656	M.			•	,			,			·		
	F3-6	Ś					200	A 90%, W	KCL ~	57,0	lebrs			
`	23-6	19			-		Pres	BA 1	ar 11	m	12/15/11			
	C3-6	25			·		V		7					
	1326	ND												
B	F36	W)						(. '		·			
,	23-6	M												
	c3-6	NO				,							•	
	B3-6	NO												
	026	NO												

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	Reservoirs Environmental,	Inc.
•	TEM Asbestos Structure C	ount

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	<u> </u>

Client :	Rank
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	995
Date received by lab	12/15/11
Lab Job Number:	2261310
Lab Sample Number:	837677

F-Factor Calculation (Indirect Preps Only):								
Fraction of primary filter used								
Total Resuspension Volume (ml)								
Volume Applied to secondary filter (mi)								

Analyzed by	JB
Analysis date	12/11/11
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules • (ISO, AHERA, ASTM)	AH -
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Oimer	skons_	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width		Amphibole	С_	NAM	Sketch/Comments	Sketch	Photo	EDS
A_	H4-3	M												
	64-3	20								•				
	F4-3	ND			Pins	A	60	In a Can	6	col	de Cares .			
	E4-3	N			RA	20	70	of . a Ga.	1	d	dela-s	. ,		
B	613-1	ND			7.	,	·	11						
	F3-1	ND						AB.	12/1	.//		·		
	F3-1	ND		•	,				7	Γ'.				
	C3-1	ND							,	,				

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: ID=	0.056 um
Primary filter area (mm2)	385
Secondary Fitter Area (mm2)	
QA Туре	

, <u></u>	
Client :	Rak
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	995
Date received by lab	12/15h1
Lab Job Number:	226(36
Lab Sample Number:	837678

F-Factor Calculation (Indirect Pre	eps Only):	·
Fraction of primary filtar used		•
Total Resuspension Volume (ml)		
Volume Applied to Secondary filter (ml)		

Analyzed by	J15
Analysis date	12/11/11
Method (D≖Dirsct, l=IndIrect,	
IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	ΔU
(ISO, AREKA, ASTM)	
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class		·	·	1 = y	es, blank	= no `
Gild	Gild Opening	Туре	Primary	Total	Length	Width	·	Amphibole	С	NAM ·	Sketch/Comments	Sketch	Photo	EDS
A	64-4	ND												· .
	GA-1	ND			2,	a.A	60%	in but	Shoc	Lbu	5			
	F4-4	ND			Pu	R	80%	intrut:	50/0	delse	5 .		. :	
	F4-1	DU			٠ ()	,							
B	K4-1	ND					1R	2/15/11						
	H4-1	ND					71	/ /		•	•.			
	624-1	NP		·	,					,	-			
	F4-1	N.D		•						•				
							·						,	

Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, s/cc = $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



December 16, 2011

Laboratory Code: Subcontract Number: RES NA

· Laboratory Report: Project # / P.O. #

RES 226206-1 None Given

Project Description:

3rd West Sub RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient In both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 226206-1 is the job number assigned to this study. This report Is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described In this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage Is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-00 [5

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 226206-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

TO TO ELLA TO THE

Client Project Description:

3rd West Sub RMP

Date Samples Received:

December 16, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

December 16, 2011

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	ID N	umber	Analyzed	Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-121511 S	EM	8 3 8187	0.0800	992	ND	0.0049	BAS	BAS
3W-121511 W	EM	838188	0.0800	992	ND	0.0049	BAS	BAS
3W-121511 N	EM	838189	0.0800	992	ND	0.0049	BAS	BAS
3W-121511 E	EM	838190	0.0800	992	ND	0.0049	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity Average Grid Opening in mm² = 0.010 Effective Filter Area = 385 sq mm

13.53.49 0700 DATA QA

Due	Date:_	(2	٠ ١	Ξ	7 `	(1
Due	Time:_		- 1	0	i '	5	





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NOTE: R	El will analyze incoming samples	based upon jpsorm	allon received and	will not be respons	ible for errors	s or omissions in o	elculati	ions res	ulting fi	rom th	he inaccu	racy o	of origin	nal da	ta. By	Hgnir	ıg cilen	/compan	y repre	sentative	agree	s that s	ubmissic	n of th	e fo8owing san	pies for re	quested	
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Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type A = Amosite An = Anthophyllite C = Chrysotile Cr = Crocidolite T = Tremolite Structure Types F = Fiber B = Bundle C = Cluster M = Matrix

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

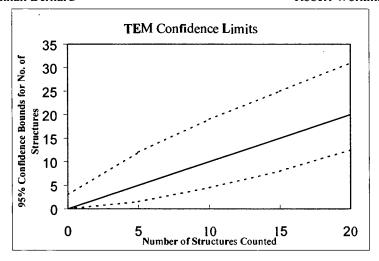
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	REI
Instrument	JEOL 100 CX /N)s
Voltage (KV)	100 KV
Magnification	(20KSK 10KSX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	. 385
Secondary Filter Area (mm2)	,
QA Type	

Client:	ROLR
Sample Type (A≄Air, D=Dust):	A
Air volume (L) or dust area (cm2)	992
Date received by lab	12-16-11
Lab Job Number:	226206
Lab Sample Number:	838187
	·

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter	

Analyzed by	JB
Analysis date	12-16-11
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
Grid		Туре	Primary	Total	Length	Width	identification	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	615-4	ND					,							
	F5-4	ND				Pup	1	70/h	mF		Le de bos			
	ES-4	ND				Pup	BIZ	3 % con f	ent	5	% Le bus			,
	C5-4	ND							,	•				,
·B	14-3	ND						B pli	10					
	K4-3	N						7/ / /						
	H4-3	M					/							
	614-3	NO												
							,							

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	2010K 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	. 385
Secondary Filter Area (mm2)	·
QA Type	

Client :	ROOFR
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	992
Date received by lab	12-16-11
Lab Job Number	226206
Lab Sample Numben	838188

TOO COMPTO TRANSPORT	1					
F-Factor Calculation (Indirect Preps Only):						
Fraction of primary filter used						
Total Resuspension Volume (mi)						
Volume Applied to secondary filter (ml)						

Analyzed by	JB
Analysis date	12-110-11
Method (O≈Direct, l=Indirect, IA≃Indirect, ashed)	۵
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	≖ no
		Type	Primary	Total	Length	Width		Amohibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	45-1	ND					:							
	K5-1	ND			Q	s A	- 60	How hun f	•	50/	bus			
	H5-1	ND			Bu	DE	, 70	of intan	4	-0/	Verbus			
	615-1	WD						,/	/					
B	K3-1	ND			·			SB 121	16/11					
	H3-1	ND		·				/P /	7					
	63-1	ND					,					·		
	F3-1	M)												
						•								
												•		

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltaae (KV)	100 KV
Magnification	(20RX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	RoarR
Samole Type (A=Alr, D=Dust):	A
Air volume (L) or dust area (cm2)	992
Date received by lab	12-16-11
Lab Job Number:	226206
Lab Sample Number:	838189
Lab Sample Number:	838189

Analyzed by	A64
Analysis date	12-110-11
Method (D=Dlrect, l=Indirect, IA=Indirect, ashed)	۵
Counting mles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):							
Fraction of primary filter used							
Total Resuspension Volume (ml)							
Volume Applied to secondary filter (ml)							

Grid	Grid Opening	Stnicture	No. of St	mctures	Dimensions		Identification	Mineral Class				1 = yes, blank = no			
-	Grid Opening	Туре	Primary	Total	Length	Width	Identinoación			Sketch/Comments	Sketch	Photo	EDS		
A	K3-3	ND													
	113-6	ND												l	
	H3-3	M		Pres	A) 80	Plui	rtact	50	le6	25					
	63-6	MD		Pilo	BA	- Pie	A								
B	FSY	N													
	F51	M				(-									
	Es4	NV						7							
	E5-1	M			(
· ·					7		,							,	

Laboratory name:	REI
Instaument	JEOL 100 CX NAS
Voltage (KV)	100 KV
Magnification	(20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	Repp
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	992
Date received by lab	12-16-11
Lab Job Number:	226206
Lab Sample Number:	838190

F-Factor Calculation (Indirect Preps Only):							
Fraction of primary filter used							
Total Resuspension Volume (ml)							
Volume Applied to secondary filter (ml)							

Analyzed by	Alt
Analysis date	12-16-11
Method (D=Direct, I=Indirect,	_
IA=Indirect, ashed)	し (ユ
Counting mles	111
(ISO, AHERA, ASTM)	HH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Strncture	No. of Str	mctures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
Sild	Ond Opening	Type .	Primary	Total	Length	Width	Identinoation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	824	NZ												
	83-4	ND												
	A3-4	MD		Pu	: A	60	Bintace	35%. 3-5%.	lebr	8				
	(5-4	MD		Pu	n Ri	90%	intacl	3-5 <u>%</u>	Jeb.	25				
B	G3-1	ND)		•			
	F3-1	ND												
	E31	ND						1						
	C3-1	(W)												

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



December 20, 2011

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 226327-1 None Given

Project Description:

3rd West Sub - RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 226327-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 226327-1

Client:

R & R Environmental

Client Project Number / P.O.: None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

December 19, 2011

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

December 20, 2011

Client ID Number	Lab ID No	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-121611-E	EM	839002	0.1000	718	ND	0.0054	BAS	BAS
3W-121611-S	EM	839003	0.1000	7 1 8	ND	0.0054	BAS	BAS
3W-121611-N	EM	839004	0.1000	716	ND	0.0054	BAS	BAS
3W-121611-W	EM	839005	0.1000	716	ND	0.0054	BAS	BAS

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity

Effective Filter Area = 385 sq mm

Average Grid Opening in mm² = 0.010

DATA QA

٠	RES	22632
	IVEO	22002

Due Date:_	122011
Due Time;	32w

REILAS RESERVOIFS ENVIRONMENTAI, INC... 5901Logan St. Denver, CO 69216 • Ph; 303 964-1986 • Fax 303-477-4275 • Toll Free :866 RESI-ENV Panar • 303-896-2068

Page 1 of

	INVOICE TO: (IF			NT)											CO	NTAC	T INI	FOR	MATI	ON:					
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Address: 47 W WOO S	Address:					Phor	10.						4		-			Phone	:						
Sandy, W. 84070							Fex:								Fex:								\Box		
							Cell/pager: 801 541-1035										Cell/pi	aper:							
Project Number and/or P.O. #					Final Oats Deliverable Email Address: Oave O : Wentho . co m																				
Project Description/Location: 3 W8st Sub - RMP							_ (<u>xai</u>	<u>je</u>	0	44	em	^	<u>9.0</u>	OM										لــــ
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PLM / PCM / TEM RUSH (Same Day) X PRIORITY (Next Day)STANDARD										- [[ĺ	-	L		Air =	A		Bu	ılk = B				
(Rush PCM = 2hr, TEM = 6hr.)	· · · · · · · · · · · · · · · · · · ·			1-1							(Ţ		ļ		ust =		-		int = P			· .	
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - Spm											- (11		- (ŀ		Soll =				pe ≃ W	 			
Metal(s) / Dust RUSH 24 tar 3-5 Day RCRA 8 / Metals S Welding RUSH 5 day	**Prior notification la] _ [Quant	1	1	l i			ĺ	اڃا		11	ļ		ŀ		ab =				Food	├			
Fume Scan / TCLP RUSH 5 day10 day	required for RUSA	١١		1 1		Scan				catic				g s		Dunkin	gvya		O = Ott		Vater = WW	 			
Organics 24 hr 3 day 5 Day	tumaroands.**	Point Count	Preps	1 1	1	**]			Quantifi	١.	_ _	1	\$ 6	t	**A81	M E1				nedia only**	 			
MICROBIOLOGY LABORATORY HOURS: Weekdays: 8am - 6pr	n	, g	ğ <u>Ş</u>			Metals			1	ð	<u>اؤ</u> ا ہے	퉏	ا ۾	Quantification IER NOTES	ŀ		T					t^-			
E.coll O157:H7, Coliforms, S.aureus24 trr2 Day		ğ	경 를	\$		E .		} }	1	18	죑	喜	Se l	- E	Ì			1)					
Salmonella, Listeria, E.coll, APC, Y & M48 Hr3-5 Day		S.	₹8	OSHA	묽	Analyte(s)		١١.	. [†	활	8	1	S S	1		1			Ì					
Mold RUSH24 Hr		13	Vac,	7400B.	Respirable	® €	_	1	+	g	å∣ĕ	ь	8	ES ST	- 1			1		ì		L			
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apply for attathours, woskends and holidays.**		Short	T ER	7400A	· Total,	Ana)	S	ale co	9	E.	+ 2	إوا	*	÷ =		ا ا	g	ez.					$v_{\frac{1}{2}} \leq v$	1.00	
Special Instructions:		ę	4 8		-1	8	Š	Salmonella: +/-	Listeria:	Aerobic Plate Count	E.cofi: +/-	S.aureus:	3 . ∞ .	칕븧	ſ	Area V	١٥	Containers	Da	ite	Time	EMN		BF (Labo Only)	ratory
Client sampla 1D number (Sample ID's must be unique	N CONTRACTOR CONTRACTOR CONTRACTOR	Z.	E de	2	DUST	METALS PCRA 8,	ORGANICS - METH	Q.Tr	<u>네스</u>	[≹] CRO				딕흏		Sample Volume (L) / Area	Matrix	8	Colle		Collected		O.O.	(1113)	: :
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2 3W-12161 S											. 7					718	宁	1 2	1	-	REAL TO S		7	~~ Øʻ	
3 3W-1216U N	<u>* 19 + 4 1 126 1 + 2 3 6 46 + 1 7 4</u>		19.23			7 11 1		1 +	+	+	-	+ 1	_	+		716	#		***		<u> </u>		 		4
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7		Ė						1	+	11	1		Ħ	+		 -	1								<u></u>
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10						747			12	1.1	1					77. 1	10				King Light				
Number of samples received: (Addition	onal samples shall be listed on	atta	ched lo	ong fo	nn.)	~	_	- '! -		<u>ا ننان</u>		نـــا	٠٠٠٠			 -		استا	· · · · ·		<u></u>		<u> </u>		
NOTE: REI wifi analyze Incoming aampies bated-upon-information received and wifi not be analysis as indicated on this Chain of Custody shall constitute an analytical earvices agreem	roeponsible for errors or ombisions in c	alcula	tiona ms	ulting f	from th	e tnacci vinent te	uracy Irnis n	of ong	jinal g sult i	data. E	By slo	ning d onthto	inten	compa	ny rep	esertati	vy agra	as the	at s ub mi:	ssion of	tha following sa	mptes for	reques	led	
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Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

Α	=	Amosite	$\mathbf{F} =$	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

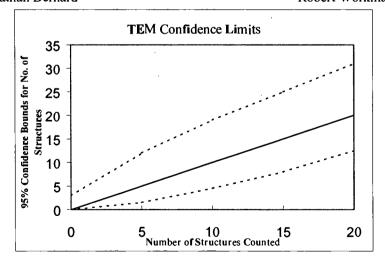
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	REI THE
Instrument	JEOL 100 CX/N)S
Voltage (KV)	100 KV
Magnification	20KX) 10KX
Grid opening area fmm2)	0.011
Scale: 1L =	0.28 um
Scale: ID =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	Roll
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	718
Date received by lab	12/19/10
Lab Job Numtier:	224327
Lab Sample Number:	824007

Analyzed by	STA .
Analysis date)2/20(d
Method (D=Direct, l=Indirect, IA≍Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AL
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspsnsion Volume (mi)	
Volume Applied to secondary filter (mi)	

Grid	Grid Opening	Structure	No, of Str	uctures	uctures Dimensions		Identification Mineral Class					1 = y	es, blank	= no
Ond	Ond Opening	Туре	Primary	Total	Length	Width	1 1	Amphibole	င	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F2-6	ND												·
	E2-6	ND		· · · · · · · · · · · · · · · · · · ·										
	C2-6	ND												
	B2-4	NO			Pa	ns.	A4B	~ 70how	bu	£	B-5% del	DV 5		
	B4-3	ND				p 		16						
13	64-6	M						46	12	20/11				
	F4-6	ND						/ /	/	/				
	E4-6	MD				<u></u>	•	/				<u>.</u>		
<u>:</u>	C4-6	M												
	E4-1	M												

3	4	-4		
°age	1	QΤ		

Reservoirs	En	virònmei	ntal,	inc.
TEM Asbes	tos	Structur	e Co	unt

Laboratory name:	ŔEI
Instrument	JEOL 100 CX/N)S
Voltage (KV)	100 KV
Magnification	20KX) 10KX
Grkl opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area	385
Secondary Filter Area (mm2)	与外导图的数据
QA Type	

TROP III
A CHAR
244
12/19
224227
\$24003

Fraction of primary filter used	
Total Resuspension Voluma (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	46.00
Analysis date	12/201
Mattiod (D=Direct, I=Indirect, IA=Indirect, ashed)	
Counting rules (ISO, AHERA, ASTM)	AU
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	mctures	Dimer	nsions	Identification	dentification Mineral Class			1 = y	es, blank	= no	
		Туро	Primaty	Total	Lenath	Width	1 1 .	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	63-3	ND									·			
	F3-3	W												
	E3-3	ND			R	ns A	89	Le in hom	_	3-5	La debors		i	
	13-3	ND			Pa	72	60	Lointrut		3~5	% debrs			
	E2-6	ND												
B	G4-3	ND					18	12/20/1						6
	F-4-3	ND					17	() /						
	E4-3	ND					(,					
	C4-B	ND				·								
	E4-1	ND												

age	1	of	

Reservoirs	Environmental, Inc.
TEM Ashes	tos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX/N)S
Voltaae (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.011
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client:	R.R.
Sample Tyoe (A=Alr, D=Dust);	NE MATTHEE
Air volume (L) or dust area (cn12)	746
Date received by lab	2/4/2
Lab Job Number	226227
Lab Sample Number	82100 4

F-Factor Calculation (Indirect Preps O	nly):
Fraction of primary filter used	
Total Resuspension Volume (mi)	
Voluma Applied to secondary filter (ml)	

Scope Alignment	Date Atlatyzed
Grid storage location	Month Arialyzed
Counting rules (ISO, AHERA, ASTM)	AH
Method (D=Direct, i=Indirect, iA=Indirect, ashed)	
Analysis date	12/201
Analyzed by	STATE OF STA

Gric	Grid Opening	Structure			o, of Structures Dimensions		Identification	Mineral Class			1 = yes, blank ≃ no		≠ no	
Gir	Grid Grid Opening	Туре	Primary	Totat	Length	Wkith		Amphibole	_c_	NAM	Sketch/Comments	Sketch	Photo	EDS
A	14-1	ND										٠.		
	64-1	ND		L	Pa	n J	1 =	70% in t	mt	5	% debus			· .
	F4-1	ND			P	DI	5	2 % 1 to	gut	5	% debris			
	E4-1	M						4						
	C4-1	MD						113	12/3	0/4				
1	3 146	ND						71.	/	//			<u> </u>	
	H4-3	ND					·							
	G4-10	ND												
	F4-3	ND						·						
12	你知る	ND												

	200 GA als Cotton Colores in a national latter of
Laboratory name:	REI
	Committee of Land Continue
Instrument	JEOL 100 CX/N)S
	And the second complete the second
Voltage (KV)	100 KV
	The Samuel of the Samuel
Magnification	20KX) 10KX
Grid opening area	公司通知是法国人的 企图
(mm2)	0.011
	0.28 um
Scale: 1L =	
Scale: 1D =	0.056 um
Primary filter area	
(mm2)	385 12 4 134
Secondary Filter Area	在 特别 新西哥 医静
(mm2)	"是"的《新疆·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯·斯
QA Type	THE RESERVE AND THE PERSON OF

RR
12/10/11
32/4
221127
82400 4

F-Factor Calculation (Indirect Prep	s Only):
Fraction of primary filter used	.— —
Total Resuspension Voluma (mil)	
Voluma Applied to secondary filtar	

Scope Alignment	Data Analyzed
Grkl storage location	Month Alialyzed
Counting rules (ISO, AHERA, ASTM)	AH
Method (D=Direct, l=IndIrect, IA=(ndirect, ashed)	
Analysis date	12/20 1
Analyzed by	DE-ALIE

Grid	id Grid Opening Structure No. of Structures Dimension		nsions	Identification	·			1 = yes, blank = no						
Gild	Grid Opening	Туре	Primary	Total	Length	Width		Amohibole	С	NAM	Sketch/Coniments	Sketch	Photo	EDS
LA	F4-6	ND				<u> </u>								
	F4-3	ND									·.			
	E4-6	ND			PV	40	6	O Links	f C	To de	brus			
	C3-10	NO			Pu	OF	71	% intan	5	lo de	love			
	B3-6	ND				<u> </u>			<u></u>					
B	F5-4	ND					B	12/20/1	<u>.</u>					
	E5-1	ND			<u> </u>		1/1	///						
	C5-4	ND												
	C5-1	ND												
	E4-1	MD												

Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening